In the Claims:

1. – 52. (Canceled).

53. (Previously Presented) A method of genetically modifying a multicellular eukaryotic diploid parasite, the method comprising transforming a differentiated developmental stage of the multicellular eukaryotic diploid parasite using a transformation method selected from the group consisting of electroporation, chemical transformation, lipofection and biolistic bombardment, so as to obtain a genetically modified multicellular eukaryotic diploid parasite.

54. (Previously Presented) The method of claim 53, wherein the multicellular eukaryotic diploid parasite is a worm.

55. (Previously Presented) The method of claim 54, wherein said worm is a flat worm.

56. (Previously Presented) The method of claim 55, wherein said flat worm is a trematode.

57. (Previously Presented) The method of claim 56, wherein said trematode is a schistosome.

58. (Previously Presented) The method of claim 57, wherein said developmental stage is miracidia, either within ova or after hatching.

59. (Previously Presented) The method of claim 53, wherein the multicellular eukaryotic diploid parasite is infective to human or animal.

60. (Previously Presented) The method of claim 53, wherein the multicellular eukaryotic diploid parasite is infective to human.

61. (Previously Presented) The method of claim 57, wherein said schistosome is infective to human.

62. (Previously Presented) The method of claim 57, wherein said schistosome is selected from the group consisting of Schistosoma mansoni, Schistosoma haematobium, Schistosoma japonicum, Schistosoma bovis, Schistosoma mattheei, Schistosoma rhodhaini, Schistosoma magrebowiei, Schistosoma intercalatum, Schistosoma curasoni, Schistosoma mekongi, Schistosoma spindale, Schistosoma leipere, Schistosoma turkestanicum, Schistosoma inidicum, Schistosoma nasalis and Schistosoma suis.

63. (Previously Presented) The method of claim 53, wherein the multicellular eukaryotic diploid parasite is sensitive to a known drug.

64. (Canceled)

65. (Previously Presented) The method of claim 53, wherein the eukaryotic diploid parasite includes a transgene integrated in the genome of said parasite.

66. (Previously Presented) The method of claim 65, wherein said transgene is integrated in a selected locus of said genome.

67. (Previously Presented) The method of claim 66, wherein said selected locus is a repetitive sequence.

68. (Previously Presented) The method of claim 66, wherein said selected locus is a unique sequence.

69. (Previously Presented) The method of claim 53, wherein the multicellular eukaryotic diploid parasite has distinguishable sexes.